

WHAT IS CLAIMED IS:

1. An apparatus for controlling a trip point that eliminates external resistor tolerance; comprising:
 - a resistor-to-digital circuit configured to generate a digital code relating to an external resistor and configured to output a trip signal to a first node relating to the digital code;
 - a temperature sensor configured to measure a temperature and output a temperature signal to the first node; and
 - a comparator coupled to the first node and configured to determine when the trip point is tripped.
2. The apparatus of Claim 1, wherein the resistor-to-digital circuit further comprises a DAC configured to receive the digital code, and in response, output the trip signal.
3. The apparatus of Claim 1, wherein the resistor-to-digital circuit wherein the comparators are configured to drive current switches that are arranged to generate the trip signal.
4. The apparatus of Claim 1, wherein the resistor-to-digital circuit further comprises a gray code.
5. The apparatus of Claim 1, wherein the resistor-to-digital circuit further comprises a thermometer code.
6. The apparatus of Claim 1, wherein the resistor-to-digital circuit further comprises a number of resistors and comparators that correspond to a desired number of zones.

7. The apparatus of Claim 6, wherein the number of resistors and comparators is approximately equal to the number of zones minus one.
8. The apparatus of Claim 6, wherein the external resistor is coupled to at least one of a current source and a voltage source and is configured to provide a signal to an input of each of the comparators.
9. The apparatus of Claim 8, wherein the number of resistors is coupled to at least one of a current source and a voltage source and is configured to generate signals for each zone, and wherein another input of each of the comparators is coupled to each respective zone.
10. The apparatus of Claim 9, further comprising an encoder coupled to the comparators and configured to produce a digital code.
11. The apparatus of Claim 1, wherein the external resistor is selected from at least one predefined resistor.
12. The apparatus of Claim 11, wherein the at least one predefined resistor comprises a predefined resistor for each of the zones.
13. A method for controlling a trip point associated with a circuit that eliminates external resistor tolerance, comprising:
 - determining external resistance;
 - converting the external resistance to a digital code using resistors and comparators associated with a desired number of zones;
 - setting the trip point;
 - measuring a temperature associated with the circuit; and
 - determining when the trip point has tripped.

14. The method of Claim 13, further comprising performing a predetermined action when the trip point trips.

15. The method of Claim 13, wherein converting the external resistance to a digital code further comprises using a DAC and an encoder.

16. The method of Claim 13, wherein converting the external resistance to a digital code further comprises using at least one of a gray code and a thermometer code.

17. The method of Claim 13, further comprising utilizing a graduated zoning assignment.

18. An apparatus for controlling a trip point for a circuit that eliminates external resistor tolerance, comprising:

- means for determining external resistance;
- means for converting the external resistance to a digital code using resistors and comparators associated with a desired number of zones;
- means for setting the trip point;
- means for measuring a temperature associated with the circuit; and
- means for determining when the trip point has tripped.

19. The apparatus of Claim 18, further comprising means for performing a predetermined action when the trip point trips.